

NOTICES OF CERTAIN PHILIPPINE FULGOROIDEA, ONE BEING  
OF ECONOMIC IMPORTANCE

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TWO PLATES AND 1 TEXT FIGURE

Melichar<sup>1</sup> describes a new fulgorid genus, *Egropa*, with one species, *inusta*, which he refers to the Tettigometridæ ("Tettigometrini"). His figures give the body outlines and a front and lateral view of the face. His species, from the description, must have been a very beautiful object, but unfortunately he possessed only a single specimen. Distant<sup>2</sup> inserts *Egropa* as an unplaced genus following the Issidæ. He quotes Melichar's descriptions and copies his figures, remarking that he had never seen the species. Considering the vast extent of the oriental material studied by Distant, one might infer that this species is a great rarity. However, it will doubtless be secured in great numbers when its food-plant is discovered. In 1907 Bierman<sup>3</sup> described a second species of this interesting genus, as living on *Cassia fistula* in Java. In the same year he figured both nymphs and imagoes of this species with the name of *Egropa jacobsoni*.<sup>4</sup>

It may be commonly noticed in these Islands that many of the large and much-prized fruits of the guanabana (*Anona muricata*) are deformed, are not plump and full all around, but bent and depressed on one side and commonly stunted in growth. Nymphs and imagoes of a species of *Gargara* (Membracidæ) were to be found occasionally on this tree, and the *Gargara* was suspected of being the cause of this common damage. Only now, after being here three years, do I discover it to be due to a beautiful species of *Hilda* (= *Egropa*), which evanescently breeds in great numbers on the surface of the very young fruits. It lays very numerous eggs in patches on the surface of the fruit and on surrounding leaves. This year it happens that large numbers of these eggs are parasitized by a minute chalcid,<sup>5</sup> so that it is

<sup>1</sup> Homopteren Fauna von Ceylon (1903), 82, Taf. III, fig. 13, a.

<sup>2</sup> Fauna Brit. Ind. Rhynch. (1906), 3, 268.

<sup>3</sup> Ent. Bericht. (1907), 2, 162.

<sup>4</sup> Notes Leyden Mus. (1907), 29, 158, Taf. III, fig. 6.

<sup>5</sup> Being described under the name *Pseudobrachysticha semiaurea* Girault gen. et. spec. nov.

possible that the coming year will see less injury from this cause in this locality. I have also taken a single specimen on *Anona reticulata*. All of the cultivated anonaceous fruits in the Philippine Islands were imported from America; therefore it is probable that this insect finds its natural food among native anonaceous fruits of the Philippine forests.<sup>6</sup>

<sup>6</sup> After this paper, describing an apparently new species of *Egropa*, had gone to the printer, I made what is, to me, an exceedingly important and interesting discovery: that Distant, although he did not recognize the identity of Melichar's *Egropa* [Fauna Brit. India—Rhynch. (1906), 3, 368], has since described entirely congeneric species in the genus *Hilda* (= *Isthmia* Stål, præocc.). Kirkaldy and Distant had considered this one of the *Issidæ*, though Stål had associated it with *Tettigometra*. Melichar properly placed it—as *Egropa*—in the *Tettigometridæ*. Thus set on the right track, I soon discovered that my supposedly new species of *Egropa* was identical with *Isthmia breviceps* Stål, a species apparently not recognized since its description in 1870. I have a second Philippine species from Palawan, as yet unstudied. The generic synonymy and bibliography of this economically important group is as follows:

Genus *Hilda* Kirkaldy

- Isthmia* Walker—nom. præocc.—List Hom. (1851), 3, 732; STÅL, Hem. Afr. (1866), 4, 218.  
*Hilda* Kirkaldy, Entomologist (1900), 243.  
*Egropa* Melichar, Hom. Ceylon (1903), 82; DISTANT, Fauna Brit. Ind.—Rhynch. (1906), 3, 368.
- Hilda undata* Walker.  
*Isthmia* WALKER, List. Hom. (1851), 3, 732. Sierra Leone.
- Hilda funesta* Stål.  
*Tettigometra* Stål, Of. Vet. Ak. Forh. (1854), 249; WALKER, List Hom. Suppl. (1858), 336; STÅL, Of. Vet. Ak. Forh. (1862), 494.  
*Isthmia* Stål, Hem. Afr. (1866), 4, 219. Sierra Leone.
- Hilda patruelis* Stål.  
*Tettigometra* STÅL, Of. Vet. Ak. Forh. (1855), 100.  
*Isthmia* STÅL, Hem. Afr. (1866), 4, 219. Caffraria.
- Hilda breviceps* Stål.  
*Isthmia* STÅL, Of. Vet. Ak. Forh. (1870), 761. Philippines (Luzon).
- Hilda inusta* Mel.  
*Egropa* MELICHAR, Hom. Ceylon (1903), 82. Ceylon.
- Hilda jacobsoni* Bierm.  
*Egropa* BIERMAN, Ent. Ber. (1907), 2, No. 34, 162, Java; BIERMAN, Notes Leyden Mus. (1907), 29, 158.
- Hilda malayensis* Dist.  
DISTANT, Rec. Ind. Mus. (1908), 2, 129. Siam, Malay States, Bukit Besar.
- Hilda bengalensis* Dist.  
DISTANT, Ann. Mag. Nat. Hist. (1909), 3, 41. Bengal.

*Hilda breviceps* Stål.

*Color*.—Upper part of face and narrow margin of vertex black; remainder of head stramineous; below stramineous; femora apically, tibiae and tarsi, darker; sides of venter pale green. Pronotum green, becoming brownish posteriorly, the submargin narrowly black, the margin white, and the anterior margin may also be more or less narrowly whitish. Scutellum green, narrowly black-margined posteriorly. Tegmina clear brown, with 4 paler areas, the darker areas blackish edged near costa, the blackish edges in every case flanked by small, elongate, shining white calloused stripes; a white calloused stripe in the clavus, another between this and the base of the tegmina on claval suture, and a third along the anal margin. Distad of the white stripe on disk of clavus is a commissural green spot; a minute white dash occurs on the inner apical margin (Plate I, fig. 1). In the male all of the greens and browns are darkened, becoming almost black, bringing the white markings out in strong relief. All below, and sometimes portions above, more or less covered with a pulverulent white wax.

General proportions of body as in *Hilda inusta* Mel. Width of the vertex (Plate I, fig. 2) somewhat more than twice the length, the fore margin broadly and evenly rounded, and the surface minutely rugulose. Width of pronotum slightly more than three and one half times the length, the hind margin nearly straight, the surface, as also that of scutellum, with sparse and very minute setigerous punctures. Scutellum one half longer than vertex and pronotum together. Upper margin of head, as seen from side (Plate I, fig. 3), irregularly curved. Face deeply concave above the central umbo. Ocellus touching eye. Last antennal joint of great size, the length two and one half times the width, tapering to the tip, which reaches the upper margin of the eyes. Form of face shown in Plate I, fig. 4; female genitalia in Plate I, fig. 6; male genitalia in Plate I, fig. 5. Wing venation as in text fig. 1. Tegmina very brittle coriaceous, venation indistinct, the general surface convex, but sharply and deeply grooved along the claval suture. Length of female, 5 millimeters, of male, 4.25.

*Egg*.—The egg (Plate I, fig. 10) is deposited in masses of from 10 to 100 or more, neatly arranged side by side in adjoining rows on the surface of a fruit or leaf. They measure 0.3 by 0.65 millimeter, and are pale yellow, the surface covered with sharply raised reticulations. The micropylar end is provided with a short stalk, capped by a pure white knob.

*Nymph.*—The nearly full-grown nymph is a most extraordinary object, reminding one strongly of certain membracid nymphs. The pronotum possesses 3 fingerlike projections, the middle one of which is much the largest. The mesonotum possesses one similar median projection. The abdominal segments at sides are extended into huge acute projections as shown in Plate I, fig. 7. The face of the nymph (Plate I, fig. 8) should be compared with that of the adult. The antennæ and vertex, especially, differ very strikingly from those of the adult. Plate I, fig. 9, is a view of the head and thorax of the nymph from in front, looking in the direction of the longitudinal axis of the body.

LUZON, Laguna, Mount Maquiling (*coll. Baker*).

Living in extensive colonies on the young fruits of the guanabana (*Anona muricata*).

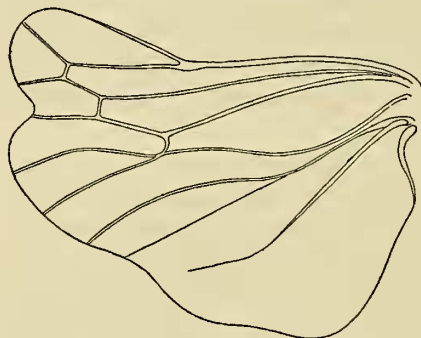


FIG. 1. Wing of *Hilda breviceps* Stål.

This species is very close to *Hilda jacobsoni* Bierman, but is distinct in form of frontal umbo and other structural details, as well as in outlines of nearly all parts of the color pattern of tegmina.

In 1870 Stål<sup>7</sup> described the new genus and species *Augila sulciceps*, remarking, "Genus singulare, maxime insigne, optime, ut puto, prope Callisceleum locandum." This remained a monotypic genus until 1906, when Distant<sup>8</sup> added a second species, *A. binghami*. In his monograph of the Issidæ, Melichar placed this genus in the Caliscelinæ ("Caliscelidæ"), and it is the first species to be treated in the monograph. The chief reason for so placing it must have been Stål's suggestion, for, by Melichar's definition, *Augila* could not possibly be placed in that subfamily. Melichar introduces a difficulty into the study of the genus, in that his figure of the species, supposedly made from the type (since he quotes "Stalsche Type im Museum in Stockholm" after the description), differs widely from Stål's original figure,<sup>9</sup> leaving one to wonder which figure is correct. In Stål's figure the width of pronotum is about four times the length, while in Melichar's it is about two and three fourths

<sup>7</sup> Hemp. Ins. Philipp. (1870), 754.

<sup>8</sup> Fauna Brit. Ind.—Rhynch. (1906), 3, 335.

<sup>9</sup> Op. cit., Pl. IX.

times. The proportions of scutellum are likewise entirely different in the two figures, and the venation of tegmina beyond the nodal vein is even specifically different. I have encountered 3 distinct species of this remarkable genus in the Philippines, none of which even nearly corresponds to the descriptions and figures of *A. sulciiceps*, as given by either Stål or Melichar. Evidently the type of *A. sulciiceps* needs to be restudied and refigured. If Distant's figure is correct (he gives almost no structural characters in the specific description), then his species is very distinct from anything yet found in the Philippines.

In Luzon I have also discovered a fulgorid with the general habitus and some of the essential characters of *Augila*, and evidently closely related to it, though differing widely in a number of respects. Melichar has made this the type of a new genus, *Augilina*, naming its sole representative *A. longipes*.<sup>10</sup> This genus is still more widely removed from any other genus in the Caliscelinæ than is *Augila*. In my opinion these two genera should constitute a new subfamily, to come before the Caliscelinæ.

#### Sufamily AUGILINÆ novum

A subfamily of the Issidæ, coördinate with Caliscelinæ, Hemisphaerinae, and Issinæ. Distinguished by the long and slender body, very slender abdomen, and the very long and parallel-sided membranaceous tegmina, which surpass the abdomen, and which have a strong transverse nodal vein, passing across from apex of clavus to costa, proximad of which occur very few cells. Vertex narrower than eye width and acutely produced far in front of eyes. All legs very long, the forelegs more than three times the length of head and pronotum together.

#### Genera of the subfamily Augilinæ.

*a*<sup>1</sup>. Vertex declivous; apical area of tegmina with numerous supernumerary veinlets and cells; anterior femora and tibiæ laminately inflated.

*Augila* Stål.

*a*<sup>2</sup>. Vertex distinctly upturned; apical area of tegmina without supernumerary veinlets, anterior femora and tibiæ not laminately inflated.

*Augilina* Melichar.

#### Synopsis of the species of *Augila*.

*a*<sup>1</sup>. Tegmina apically evenly rounded, with at least 1 large cell before the nodal vein; length of vertex less than five times the width between eyes.

*b*<sup>1</sup>. Face shorter than vertex (as figured by Melichar), and its margin straight in side view; apical area of tegmina only brown on inner portion..... *A. sulciiceps* Stål.

<sup>10</sup> *This Journal, Sec. D* (1914), 9, 276, Pl. I, fig. 8.

- b*<sup>1</sup>. Face always longer than vertex, and its margin deeply sinuate in side view; apical area of tegmina all brown, or both sides decolorated.
- c*<sup>1</sup>. Tegmina with 3 large anteapical cells, one of these being in the middle area, the supernumerary cells of apical area comparatively few and all long and narrow (as figured by Distant).  
A. binghami Dist.
- c*<sup>2</sup>. Tegmina with only 2 large anteapical cells, without one in middle area; supernumerary cells very numerous, many short and broad.
- d*<sup>1</sup>. Lateral carinæ of vertex evenly curved; the genæ very short as seen in vertex view..... A. valdesii sp. nov.
- d*<sup>2</sup>. Lateral carinæ of vertex distinctly bisinuate on anteoctular portion; the genæ long as seen in vertex view.  
A. negrosensis sp. nov.
- a*<sup>2</sup>. Tegmina strongly angulated at outer tip, with only 1 large anteapical cell; length of vertex more than six times width between eyes.  
A. angulata sp. nov.

*Augila valdesii* sp. nov.

Color entirely sordid stramineous, except the legs. Forelegs darker, with 2 rather indistinct still darker bands across the fore tibiæ. Middle and hind legs white, with hind coxæ and extreme tips and bases of hind femora somewhat darkened. Tegmina hyaline, the main veins brown, the supernumerary veins red.

Length of vertex (Plate II, fig. 14) about four and one half times the width between the eyes, the lateral carinæ evenly curved, the median sulcus somewhat cross striate posteriorly, smooth anteriorly. Width of pronotum about four times the length, with 2 strong longitudinal furrows, one on each side of median line, the surface smooth. The scutellum smooth, with lateral carinæ nearer to median line than in *A. negrosensis*, and the entire area between the carinæ strongly depressed. Upper margin of head as seen from side (Plate II, fig. 17) broadly and shallowly emarginate, the margin somewhat elevated beyond the concavity. Face emarginated distinctly below the middle. Ocellus distinctly farther from the eye than its own width. Antennæ with somewhat swollen tips. Venation of apical area of tegmina as shown in Plate II, fig. 15. The male genitalia cannot be studied without dissection, which will require more material than is available; however, a partial side view, simply showing the sutures as they appear, is given in Plate II, fig. 16.

Male, length to tip of tegmina, 8.5 millimeters.

LUZON, Laguna, Mount Maquiling (*coll. Baker*).

This very distinct species is named for Julian Valdez, an orphaned Cuban, whom I took under my protection eleven years ago, and have since trained to be one of the most efficient field collectors known to me.

*Augila negrosensis* sp. nov.

Color piceous to black with the following parts sordid stramineous: Head above and around eyes, tip of scutellum, mesonotum, metanotum, base of abdomen above, 2 spots on inner lamina of fore tibiæ, bases of middle femora, middle tibiæ, and hind tibia toward tips. Tarsi all whitish, with the last joint black-tipped above. Tegmina hyaline, the main veins black, the apical area dark brown, the veins of apical area reddish.

Width of vertex between eyes (Plate II, fig. 20) about one fifth the length, the lateral carinæ strongly bisinuate on ante-ocular area, the intercarinal area at this point more deeply sulcate and with inner surface smooth and shining. Width of pronotum somewhat more than three times the length, with a strong complete median groove, the surface sparsely punctate. Scutellum minutely transversely wrinkled and with complete longitudinal carinæ on the midlateral lines. Upper margin of head, as seen from side (Plate II, fig. 21), broadly bisinuate emarginate. Margin of face in side view strongly incurved at about the middle. Ocellus distant about its own width from the eye. Antennæ nearly cylindrical. Venation of apical area of tegmina as shown in Plate II, fig. 19; wing venation as shown in Plate II, fig. 18.

Male, length to tips of tegmina, 9.5 millimeters.

NEGROS, Occidental Negros, Cuernos Mountains (*coll. Baker*).

In coloration this species strongly resembles *A. sulciiceps* and *A. binghami*, but is very distinct from these in structural characters, at least as these are described and figured by Stål, Melichar, and Distant.

*Augila angulata* sp. nov.

Color entirely pale stramineous, the fore legs sparsely speckled with brown dots and with a single brown band across the fore tibiæ; the venter blackish; middle and hind legs white, with bases of hind femora darkened; pronotum and scutellum with a median red line. Tegmina hyaline, the veins all very pale except near inner tip, where they are reddish; the apical area brownish except along inner and outer margins.

Width of vertex (Plate II, fig. 12) between eyes about one sixth the length, the lateral carinæ very gradually curved, a large part of the median sulcus cross striate, though smooth anteriorly. Width of pronotum about three times the length, with a carina on either side of median line and a broad median sulcus between these carinæ. Scutellum smooth, with longitudinal carinæ on the midlateral areas. Upper margin of head as seen from side

(Plate II, fig. 11) not emarginate, the line slightly raised before the apex. Face emarginated just below middle. Ocellus its own width from the eye. Antennæ very short, the last joint globular. Tegmina strongly angulated at outer tips, the venation of apical area as shown in Plate II, fig. 13.

Female, length to tips of tegmina, 9.5 millimeters.

LUZON, Laguna, Mount Maquiling (*coll. Baker*).

This species differs widely from all others of the genus by the form of tegmina.